12-19-2001

A study to determine the impact of the Picture Exchange Communication System on challenging behaviors in adults with autism

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A STUDY TO DETERMINE THE IMPACT OF THE PICTURE EXCHANGE COMMUNCIATION SYSTEM ON CHALLENGING BEHAVIORS IN ADULTS WITH AUTISM.

by
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A Thesis

Submitted in partial fulfillment of the requirements of the
Master of Arts Degree
of
The Graduate School
at
Rowan University
December 19, 2001

Approved by, _____
Professor

Date Approved 12/19/01

ABSTRACT

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A Study to Determine the Impact of The Picture Exchange Communication System on Challenging Behaviors in Adults with Autism
December 2001
Dr. Klanderman, Thesis Advisor
Master of Arts School Psychology

The purpose of this study was to determine if an increase in communication skills, over an 80 week period, in adults with autism would decrease challenging behaviors. The sample in this study consisted of 3 adult males diagnosed with autism and no verbal communication skills. The participants were between the ages of 24 and 27 and attended a data treatment center, which was used as the training environment in the current study.

The Picture Exchange Communication System was the primary treatment for three adults who have no verbal language and are diagnosed with autism. Treatment sessions were conducted throughout the course of the day through both mass and situational trials.

The results of this study found no consistent evidence that adults who utilize PECS will have a decrease in challenging behaviors exhibited. However there is evidence that functional communication can increase with training in PECS.

MINI-ABSTRACT

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The purpose of this study was to determine the effectiveness of the Picture Exchange Communication System in reducing challenging behaviors. This was a longitudinal study, conducted over 80 weeks, the sample consisted of three autistic adults who attend a day treatment program. Utilizing a daily behavior data collection sheet data was collected through the day in addition; PECS data was collected throughout the course of the day using both discrete and incidental trials. This study found no consistent evidence that as independent communication increases challenging behaviors will decrease.

ACKNOWLEDGEMENTS

The author wishes to thank all those who participated in the study and her family, especially her husband Michael for all the support and encouragement. In addition, a special thanks to her thesis advisor, Dr. John Klanderman, for his wisdom and patience.

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CHAPTER I
Introduction to the Study

Need

The researcher involved in this study is employed at an adult day treatment program for challenging behaviors. One of the most important aspects of the program is to ensure the highest quality of life available to all clients. Those enrolled in the program are diagnosed with autism and multiple other developmental disabilities and for the purpose of this study the participants are non-verbal. During the course of the day they may encounter many situations that require them to make choices and communicate with others, however their lack of communication can at times lead to frustration which, may invoke irrational emotions. Because of their disabilities these emotions may lead to Challenging behaviors that are incompatible with the environment in which they are. As a result they are times being punished for their inability to communicate because they are removed and or restricted from the environment in which the behavior occurred.

The inability to appropriately express themselves can be quite debilitating for individuals with developmental disabilities. An extensive amount of research has been done on the effects of multiple treatment approaches of communication disorders in the developmentally disabled population. It is apparent that augmentative communication device are successful in promoting communication and reducing Challenging behaviors.

The participants involved in this study were selected by the severity of

both their communication deficits and the presenting Challenging behaviors. Each participant varies in his or her actions and in situations that may arouse challenges, however the intensity of the behaviors is quite similar. The most prevalent situations that are interfering with the communication process is the lack of education on available assistive devices, because decisions are made frequently and are difficult to avoid, it is imperative that research continue to be conducted.

The primary goal as an employee is to integrate all clients into normative society. As a researcher the primary goal must be to increase opportunities for clients to make their own decisions and to independently express their wants and needs thus decreasing the irrationality in clients that is brought on by their communication disorder.

Purpose

The objective of this research study was to examine the effectiveness of the Picture Exchange Communication System (PECS) to increase independent communication. With the use of this form of augmentative communication a decrease in Challenging behaviors is likely.

Hypothesis

It is hypothesized that there is a high level of congruence between the increased communication skills via PECS and reduction of challenging behaviors in autistic adults with communication disorders.

Theory

Autism is a disorder that affects the ability to communicate, form relationships and respond appropriately to the environment. Many people with autism resist attention and affection and half remain mute throughout their lives. The combination of early intervention, special education and medication is helping many lead normal lives. Children and adults with autism often have great difficulty using language to express themselves. Some of these individuals are non-verbal while others are able to communicate via short sentences or single words, these communication delays can affect children's abilities to interact effectively, as well as having negative influences in other areas of development (Schwartz and Garfinkle, 145). Facilitated communication and FCT are two methods used to increase communication.

Facilitated communication is based on the idea that using gestures is a more promising approach then modeling verbal language (Kernwein, 157). It is suggested that facilitated communication unlocks communication between autistic world and the real world. Techniques range from a symbol board system to complex computers, it is said to help overcome physical and emotional problems. However as you will see in the following chapter the bulk of the work does not demonstrate that facilitated communication is effective for most.

Functional Communication Training (FCT) has enabled some to challenge the label they have been given (Crossley, 49). It is based on the theory that the alternative to challenging behaviors is to teach behaviors that are functionally

equivalent to the students challenging behavior. If the student has another efficient way of obtaining the consequence that maintained their behavior their behaviors will decline (Durand and Carr, 254). FCT exists in a variety of formats to include both verbal and nonverbal imitation training, sign language and picture symbols. This study will focus on PECS as the communication device.

PECS is a system that provides children with an effective and functional method of communication. PECS emphasizes social interaction aspect of communication by requiring an exchange (Bondy and Frost, 18). Complete sentences can be constructed using picture symbols, and they can be taught to initiate communication utilizing this system. The PECS system can be used to help request various items and/or requests. Some examples may include: using a picture schedule to organize and structure the day, selecting the reward they will be working for, choosing what they want to eat and using a book with pictures to independently communicate their wants and needs.

Any communication mode can be successful if it is motivating and functional as well as easily used by students and understood by others.

Definition of Terms

Alternative communication: Any procedure or device that substitutes a non-speech mode of communication for spoken language

Augmentative Communication: Any procedure or device that facilitates speech or spoken language.

Communication board: An apparatus on which letters, numbers and commonly

used words are represented to assist individuals for whom oral expression is difficult or impossible.

Communication Disorder: A problem with hearing, language, and or speech, including articulation, voice and fluency.

Developmentally disabled: A disability caused by mental retardation or a related condition and which is manifested before the age of 22.

Challenging Behaviors: Any behavior an individual exhibits that goes against society's norms.

Extinction: Withdrawal of reinforcement or reward.

Facilitated Communication: Attempts by a person with a communication disability to convey thought and feeling through means other than spoken language, with the assistance of another individual.

Generalization: The ability to apply a rule to situations other than those in which it was learned.

Normalization: The principle of making available to people with disabilities daily activities that are culturally normative to the mainstream society.

Assumptions

The researcher assumes that the participants are a representative sample of the autistic population, and that the behaviors were being maintained due to a lack of communication. Also, it was assumed that data collected by those other than the researcher was sufficiently free of error.

Limitations

Several limitations underlie this study. First, it was limited to a small group of autistic adults enrolled in a day treatment program. Second, there is limited information available on the effectiveness of PECS on reducing Challenging behaviors. Third, due to the small sample size generalized findings may not be possible.

Overview

In the following chapter, literature pertaining to research on communication disorders and the use of augmentative communication devices for FCT as a means to increase independent communication and reduce Challenging behaviors is reviewed. In the third chapter, the design of the study will be discussed in more detail, along with an in depth look at the PECS program. Analysis of the results will be presented in chapter four. In the final chapter, there will be a summary and a discussion on the conclusions of the study.

Chapter II
Review of the Literature

Introduction

The benefits of PECS for the development of functional communication and reduction of challenging behaviors has not been sufficiently researched over the years. Features of FCT have been questioned and studied, in these studies various communication modes have been used to include facilitated communication, sign language, picture boards and imitative skills. The primary focus of this chapter is to explore previous studies that have focused on the use of FCT using augmentative communication devices and the effects it has on not only increasing independent communication but also reducing challenging behaviors. The following is a review of previous studies reflecting the significant results of the implementation of facilitated communication training with the developmentally disabled population.

Review of Facilitated Communication Training

Salomon et al believe that many individuals have reP2able literacy and intellectual abilities masked by disabilities. In this study three phases were used to measure the effectiveness of facilitated communication. In the first phase the participants were read a story with the facilitator out of the room, in the second phases the examiner asked the participants questions and in the third phase the facilitator assisted the participant with answering the question. Out of the 13 boys in this study only one was highly accurate in using facilitated

communication. Accuracy was measured on the answers to the questions presented form the story read to them when the facilitator was out of the room.

A similar study was conducted by Regal et al on facilitated communication with 19 participants at a day treatment center, which was a setting was high support and administration of facilitated communication. During training sessions the participants were in a room without their facilitator where they were read a story and later asked to answer questions with the help of their facilitator. It was found that correct responses were at chance levels, and was hence not an effective method of communication.

Szempruch and Jacobson provided an evaluation of facilitated communication with a broad population of 23 participants with developmental disabilities, all of whom lacked speech and used facilitated communication via a letter board. The facilitator in this study was given the opportunity to choose whom they wanted to work with, during training session the facilitator was out of the room and the participants were shown a picture of common objects. When the participants were assisted in answering what the object was there was not one instance of successfully identifying the objects. This is yet another example of the inefficiencies of facilitated communication.

Review of Functional Communication Training, Other than PECS

As mentioned above FCT comes in various forms, the following review of literature will be broken down by the augmentative communication device used in each study:

Verbal/Imitative Communication

Casey and Kates conducted a study of three participants, 2 male and 1 female, with mental retardation who are being treated for severe problem behaviors. It was identified through a functional analysis that the behaviors were occurring exclusively during instructional activities. The participants were trained to request a break by the teacher modeling " If you do not want to work, say no?" Any appropriate request for a break was immediately reinforced. As independent communication increased the participants were granted a break after they were told to complete a designed number of steps, after which the time on break was shortened. The results of this study showed that as a functional replacement was made for the challenging behavior compliance to task was increased and a reduction in challenging behaviors was evident.

A study to prove that FCT is only effective if the teaching is functionally relevant was done by Carr and Durand. They tested this by training two adults with mental retardation with both relevant and irrelevant statements. When the statements were taught in the wrong contexts the behaviors continue, however when the statements were relevant to the situation the adults' communication increased and their behaviors decreased. This study showed that in order for communication to be independent it is in fact necessary for the training to functionally relevant

Sigafoos and Mickle found that some challenging behaviors represent a lack of verbal behavior. They conducted a study with two boys with autism and frequent aggressions. In this study they began with getting the teachers attention

using used a graduated guidance approach, after which they were taught verbal imitative skills, as independent requests increased the communication time in which the teacher responded was slowly increased. This study showed that as long as the communication is functionally equivalent it will reduce challenging behaviors.

Sign Language

Oneill and Sweetland-Baker did a study of two males diagnosed with autism and mental retardation and have no vocal skills are being treated for challenging behaviors. The participants were engaged in three to five tasks situations a day, during such situations they are taught to request a break via sign language. Upon the occurrence of a behavior the participants were redirected to work, however when a break was requested via sign language (with or without the trainers prompt) they were reinforced with a break. The students were at near zero levels of behaviors across all tasks. This study showed the benefits of combining FCT with extinction.

Campbell and Lutzker took a slightly different approach in measuring the ability of a parent to maintain and transfer FCT training. An 8 year old boy was taught FCT in his home environment, the first phase required him to sign please when he wanted a snack, after that was successful the second phase was introduced whereby he was introduce to a more natural environment and taught to sign for things in full sentence, in the final phase he was brought out in the community and taught to request, via signs, the necessary things. After he met specified criteria at each stage the mother continued with his training. The study

showed that transference could occur between the trainer and the parents.

Communication Board/ Token

Bird et al investigated the use of FCT with two males with mental retardation and a history of self-injurious and aggressive behaviors. During trainings an exchange of a token represented a break from demands, in the beginning prompts were promote to encourage the exchange however they were soon faded. This study showed an immediate and substantial reduction in targeted behaviors, and were maintained at low levels when new tasks were presented. This technique proved to be an effective non-aversive intervention for challenging behaviors.

In a study by Kahng et al, seven males with autism and mental retardation were introduced to a picture communication system in addition to their vocal language. The purpose of this study was to see if communication symbol alone is more effective than communication symbol and verbal language in reducing challenging behaviors. A functional analysis showed that their behaviors were being maintained by access to tangibles. During this study tangibles were restricted and two conditions were set. In the single condition the participants were only reinforced when they used communication, in the multiple condition they were required to use the picture communication symbols and verbal language. The researchers found that independent communication increased while challenging behaviors decreased in the multiple phase more so than in the single phase, thus showing that a total communication approach may be beneficial.

Kemp and Carr conducted a study involving a multi-step task in an employment site. Three adult participants diagnosed with autism participated in this study. The objective was to have the participants completed a multi-step task with the absence of challenging behaviors. The training sessions were set up so that the participants wore a picture symbol on their shirt that represented "I want a break", the trainer used most to least intrusive prompting to get the participants to point to the symbol on their shirt, after which they were immediately reinforced with a break. Once independent communication increased the prompting was faded and the amount of time on break was decreased. Following intervention, all participants were able to complete multi step task in a community green house with no significant behavior challenges.

Hamilton and Snell research using the Milieu approach to promoting functional communication. The study was done with a 15 year old male diagnosed with mental retardation. Prior to the study he would use, with prompts only, a communication book with 117 symbols. By structure the environment to promote language and using the Milieu approach (1. eye contact, 2. eye contact and question, 3. eye contact and mand, 4. eye contact, mand and model) the participant was bale to point to his symbols without prompting, and in a follow up study two years later he was successfully using his book with complete independence.

Hunt and Goetz took at slightly different approach in looking at using interrupted behavior chains to promote functional communication. Doing so they used daily activities and routines to serve as the context for communication. For

this study they used three persons with severe disabilities who lacked verbal communication and used a picture book to point to there wants and needs. During the course of the day they would insert a trial into an already established sequence, they would do this by delaying presenting of material needed to complete routine, using passive blocking and by removing an item. Since communication was necessary to continue with the activity the participants quickly learned to request items to continue with their routine. This study indicates that communication training may be more effective with the use of interrupted behavior chains as opposed to mass training.

Comparative Studies

On a study to determine maintenance, Durand and Carr, looked groups of children were used in this study to determine if time out or FCT promotes maintenance of learned skills. The first group received imitation training and were required to take a time out after any targeted behaviors were exhibited. In the FCT group they were trained to request attention or break, praise and reinforcement were given after a request was made absent target behaviors. The results indicated that the time out group showed no decrease in target behaviors and no maintenance of learned skills, on the other hand the FCT group maintained their skill and showed improvement in exhibiting targeted behaviors.

Durand and Carr did a similar study to look at maintenance and transference. The participants were three boys with developmental disabilities who had a variety of interventions that resulted in no improvements. During the training sessions the participants were taught alternative communication

responses to serve the same function the challenging behavior was maintaining. A one-year follow up showed that the participants were able to transfer previous learning to their new teachers and classrooms and continued to decrease their behaviors.

Rotholz et al looked a comparison study of sign language and a communication board. The study was done with two males ages 17 and 18 who had functional use of an average of 25 signs. The session s took place in a McDonalds where several sessions were done using sign language and the others were done using the communication board. Correct responses where recorded when the participants received their preferred items. The use of sign language showed to be not functional in that they were not easily understood, however in the majority of sessions the picture board was an acceptable of communication with others and getting desired outcome.

In a comparison study of extinction and FCT, McConnochie and Carr found that in a study with three children with developmental disabilities it was evident that FCT was not effective for behaviors that have a social basis. It is thus evident that other approaches in addition to FCT such as extinction may be more effective and FCT is not always the treatment of choice.

In a similar study Hogopian et al evaluated FCT for 21 individuals with mental retardation whose challenging behaviors were maintained by social reinforcement. This study looked at three situations to assess which condition was most effective. They were FCT with extinction (target response did not elicit reinforcement and only communication did), FCT without extinction

(reinforcement was on a fixed ratio and there was no consequence for behavior), and FCT with punishment (time out was provided at the onset of behavior). It was evident that FCT alone was effective however the most significant results were when it was combined with both extinction and timeout in which the participant was only being reinforced for the presentation of appropriate behavior.

Review of PECS as a Functional Communication Training Device

Gerra and Doffman conducted a case study on PECS with an autistic child with 30 words. It was evident in this study that by giving the participant access to her communication board at all times her independent communication increased because she appeared to have more control over her environment.

Simon et al provided a follow up study from a previous study that illustrated the effectiveness of facilitated communication with a child diagnosed with autism. During the follow up the child refused to participate in facilitated communication training, which may have been due to his new classroom using PECS. In this study the researchers compared facilitated communication with PECS, in doing so the child the child had to identify objects in a bag via one of the above mentioned communication systems. It was evident that PECS was a valid and reliable source in that he had 100% accuracy; however there was no validation of facilitated communication as the child had 0% accuracy.

An analysis of the results of Liddle over a fourteen-month period of implementing PECS training could increase independent communication. A study was conducted with 21 participants, who were actively involved in PECS

training on a daily basis in their classroom environment. Over a fourteen month period all but one child was using the PECS system effectively in their classroom setting. The study seems to show that PECS is effective however the author stresses that a control group was not used and the training was not tested for generalization.

In a similar study Schwartz and Garfinkle conducted a study of PECS using 31 children with various developmental disabilities. The study began with a preference assessment to determine motivating stimuli. Throughout the classroom picture symbols were available to them at all times, and systematic opportunities to use PECS were established. Throughout the day the quantity of the preferred item was limited to increase the likelihood of additional requests. All 31 students progressed to communicate independently at an average of 14 months, and 44% developed spoken language.

Summary

The literature discussed in this chapter has two constant characteristics, the first being that facilitated communication training does not show consistent data supporting independent communication The second, is that the use of FCT to PECS increases independent communication while reducing challenging behaviors. Again, FCT via augmentative communication devices comes in many forms, whatever the method used in treatments the results remain stable. Carr and Durand summarized why FCT is so effective:

> "The therapist reinforces an alternate response with the same consequence as that produced by aberrant

behavior, FCT thus weakens the aberrant response-reinforcer relation by providing the reinforcer for inappropriate behavior contingent on the alternate response"(Carr and Durand, 1985).

Chapter III
Design of the Study

Sample

Three adult participants with no verbal communication skills who have met the DSM-IV criteria for autism were used in this study. They were referred for their intense levels of Challenging behaviors, which interfere with their adjustment in the community. Each participant is living in the same residential facility for individuals with developmental disabilities, and attends a prevocational day treatment program on a daily basis.

Participant 1 (P1) is a 25-year-old male diagnosed with autism and moderate mental retardation. He has no communication skills, but will move his mouth in an effort to speak simple words. He has no physical disability and is not taking any psychotropic medications. P1 is very receptive and when approached with a choice he will point to the preferred item. He does have a history of exhibiting self-injurious behaviors displayed in the form punching and kneeing his face. P1 behaviors are categorized as self-injurious behavior (SIB) above and below. SIB Above is defined as any time P1 punches, knees or bangs his body anywhere above the shoulder. SIB below is defined as banging, elbowing and kicking any part of his body from the shoulders down.

Participant 2, is a 27 year-old male diagnosed with autism and profound mental retardation, he also has severe communication and cognitive deficits. He has a very limited attention span and will not express his wants in any way. His challenging behaviors are displayed in the form of aggressing by pinching, grabbing and pushing others.

Participant 3 is a 24-year-old male diagnosed with autism and moderate mental retardation. P3 has no communication skills and extremely delayed receptive skills. He will exhibit his maladaptive behaviors in the form of disruptions, which are defined as screaming, humming guttural noises and any other vocalizations, which is above normal conversation tone.

Measures

To evaluate treatment an individual case study design was used. Assessments were conducted through the use of three methods: interviews, direct observation, and baseline assessment. Direct care givers and primary staff of all three adults has stated that the challenging behaviors interfere with their daily routines. Due to the participants inability to rate their communication and behavioral challenges direct observation was used. This allowed for measurement of the occurrence of challenging behaviors exhibited by the participants. As mentioned previously, in an effort to reduce the behaviors exhibited by the participants they will be introduced to an augmentative communication system, the communication device of choice for this current study was The Picture Exchange Communication System.

PECS is a multi phase system that requires two adults, one who serves as the communicative partner and the second adult who serves as the instructor and provides prompts while seated behind the child. The second adult is faded out as soon as possible. The following indicates the order of phases and the goal of each:

1. Teaching the physically assisted exchange: Picture symbol is picked up and handed to the communicative partner.
2. Expanding Spontaneity: Trainer moves from the trainee so that the trainee can initiate the communication process.
3. Simultaneous discrimination of pictures: Selection of the correct symbol from an assortment and completes correspondence checks.
4. Building Sentence Structure: Selection of preferred symbol from a book added to an "I want" strip and exchanges the sentence strip with the communicative partner.
5. Responding to" What do you want": Respond to question via symbol regardless if object is present.
6. Commenting in response to a question: Answers to "what do you see?" which is not rewarded with the item as it may be misconstrued as a request.

PECS acquisition data was collected from each participant's Individual Habilitation Plan (IHP) data book. Because PECS training was an objective of each participants IHP, data was collected to document when each participant started training and to track their progress through the program.

Baseline

Baseline data was collected from the IHP goal developed for each participant. Baseline data for PECS was calculated by averaging three training

sessions conducted prior to formal training. The training sessions were approximately twenty minutes and were conducted in both an 8'x10' session area and a living room. In the session room ten trials were presented in a mass trial format whereby the participant was given the opportunity to engage in leisure opportunities, such opportunities were prompted by the staff using a non-verbal hand cue, and when necessary the second training would use physical guidance to facilitate the communication

In addition, ten situational trials were conducted in the living room where a cleaning task is done; in order to complete the task the participant needed to request the necessary items. Staff again prompted a non-verbal cue by presenting an open hand, and when necessary the second training would use physical guidance to facilitate the communication.

For each participant behavioral data has been documented over utilizing daily behavior data sheets. To the find the current level at the time of IHP the average of the last three months is used. For the purpose of this study three months behavior data prior to formal PECS training, was averaged.

Design

PECS was used as the primary treatment for the participant's communication deficit. Treatment sessions were conducted throughout the course of the day, while in the day treatment program, through both mass trial and situational trials. Data was recorded on the PECS data collection form provided in the PECS manual (Bondy and Frost). Trials were recorded as

correct when the communication step did not require any physical guidance, and discrimination (when appropriate) was carried through. Participants advanced to the next phase of PECS once mastery criterion, 90%, was met. In addition behavioral data was collected throughout the course of the day for all behaviors.

Testable Hypothesis

Ho: No difference will be found in challenging behavior exhibited by participants after the implementation of PECS.

H_1: A decrease will be found in the number of challenging behaviors exhibited after the implementation of PECS.

Ho: No difference will be found in the levels of independent communication after the implementation of PECS.

H_1: Levels of independent communication will increase after the implementation of PECS.

Analysis

Once data was collected it was put into table and graph format and analyzed. The tables and graphs represent individual and group outcomes. The descriptive data will be presented to measure what changes in functional communication and challenging behaviors have been made in each participant

Summary

A sample size of 3 autistic adults was used in this within participant design

study. In an effort to determine if PECS is an effective behavior intervention, PECS accuracy and percentage of behaviors exhibited were evaluated to see if there was any congruence. Levels of independent communication were measured using PECS data tracking method; Challenging behaviors were measured by using a daily behavior data tracking sheet.

Chapter IV
Analysis of Results

Data was collected for the three participants to measure the effectiveness of PECS in increasing functional communication skills while decreasing challenging behaviors. Baseline levels and mean challenging behaviors during each phase of PECS were recorded for each participant (see Table 1). The data collected shows evidence that challenging behaviors do not improve based on increased communication.

Table 4.1: Current Level of behaviors prior to training and mean level during each communication phase.

Participants	Current Level prior to communication training	Behavior mean at phase I	Behavior mean at phase II	Behavior mean at phase IIII
1	Above: 31%	Above: 27%	Above: 23%	Above: 25%
	Below: 10%	Below: 11%	Below: 6%	Below: 1%
2	12%	14%	11%	10%
3	48%	44%	36%	53%

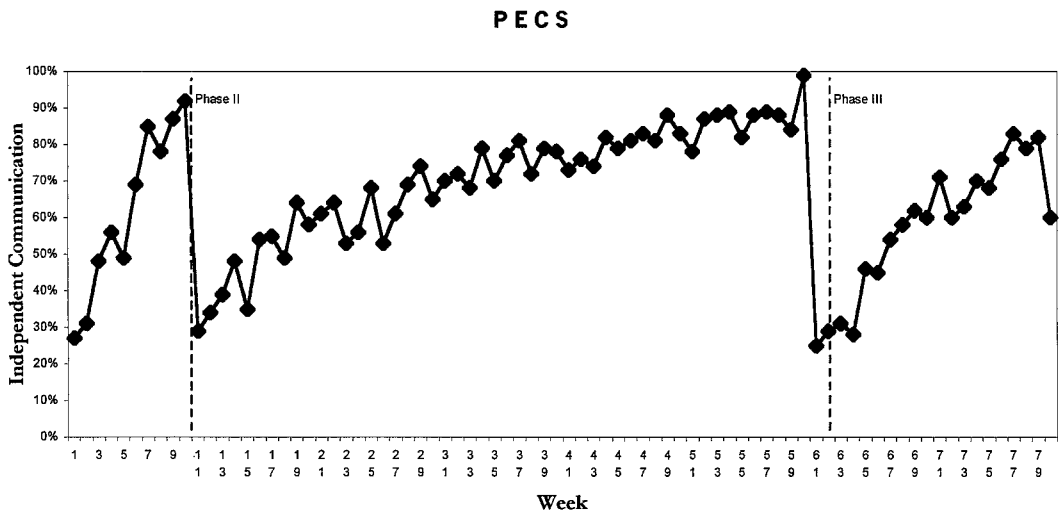
The above table gives indication that in the current study, PECS is not a successful behavior intervention. There is not a significant decrease in behaviors for any of the three participants. The graphs presented in the following section will give a clearer understanding of behavior trends as communication increased.

Measures of PECS training and Challenging Behaviors for Individual Participants:

To look at progress over time individual graphs for each participant are illustrated to show accuracy in using PECS as well as percentage of challenging behaviors exhibited over the course of a day. The data represented in each graph is the weekly average of each participant (See figures 4.1 through 4.7).

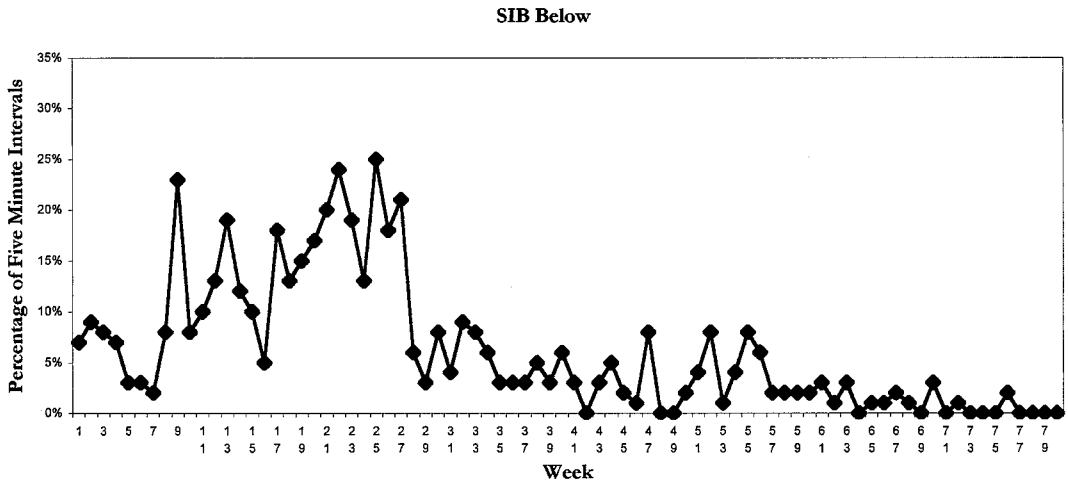
During the eighty week period each participant advanced to phase three of PECS. As described in previous chapters, phase one focuses on teaching the physically exchange of the picture card; phase two emphasizing spontaneity by requiring the participant to initiate the conversation by moving to the trainer and exchanging the picture card; phase three stresses discrimination by presenting two pictures with corresponding items and the participant is required to choose the picture of the preferred item and discriminate by choosing the corresponding item. In all phases the participants advanced to the next phase when they reached a weekly average of 90%.

Figure 4.1 (P1, PECS accuracy)



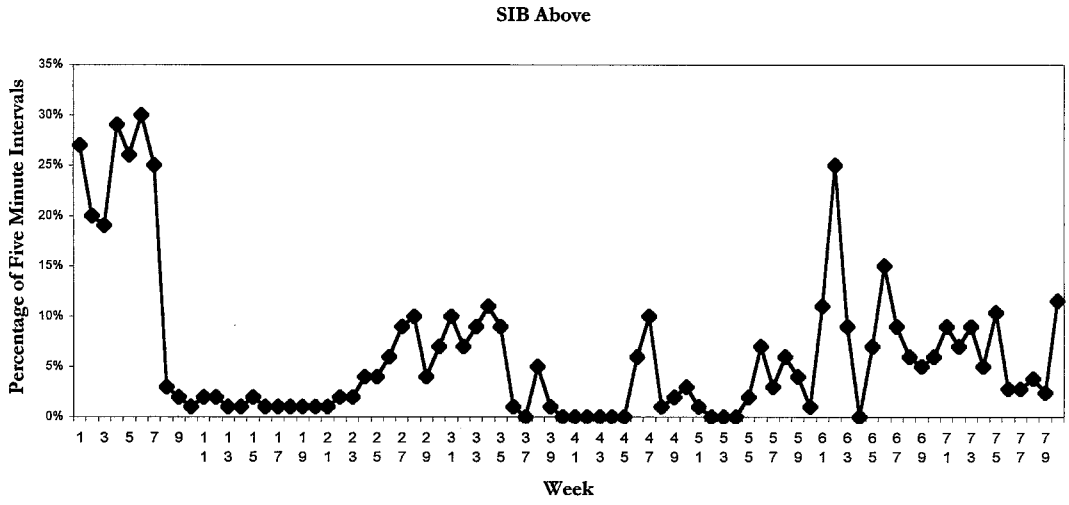
As reflected in the above chart P1 quickly mastered phase one, however due to his need to restrain his arms and legs in a chair intertwining them in the legs and spindles, it was difficult for him to master phase two which required him to initiate moving from his seat. At the present time P1 is showing consistently high levels of discrimination and is expected be begin phase four shortly.

Figure 4.2 (P2, weekly average of SIB's below)



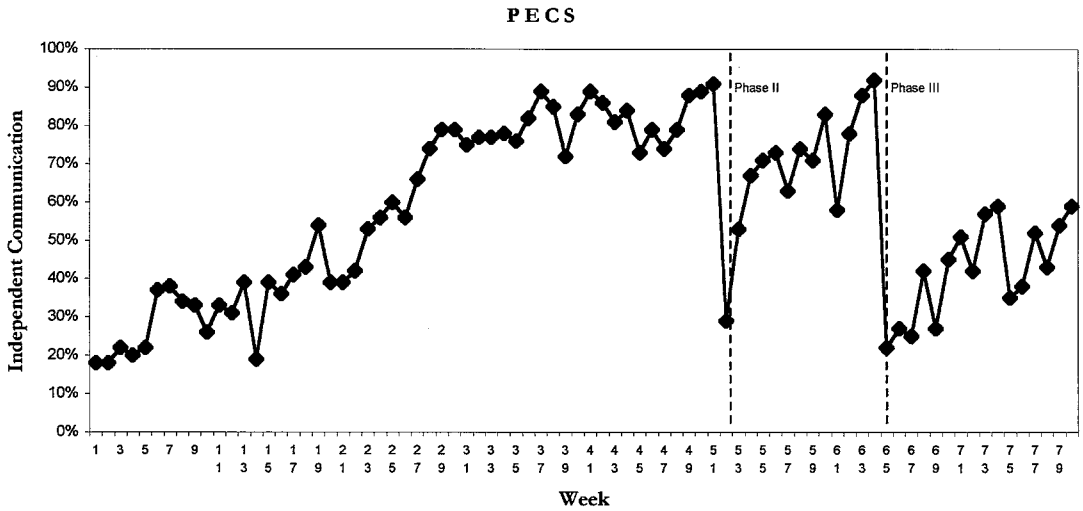
The above graph indicates that as PECS training was introduced P1 showed an increase in below SIB's. However, approximately five months into the training he began showing a downward trend and is now stable a near zero levels.

Figure 4.3 (P2, weekly average of SIB's above)



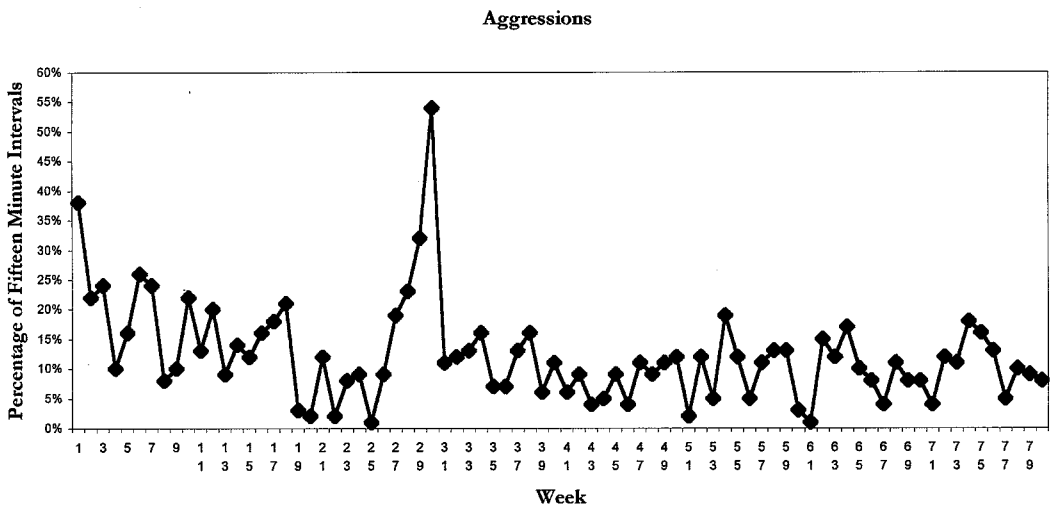
This graph appears to indicate the opposite of P1's preceding graph. It is evident that as PECS was introduced P1 showed a decrease in SIB above; however, as communication progressed he began to demonstrate a stable increase in rates of SIB above

Figure 4.4 (P2, weekly average of PECS accuracy)



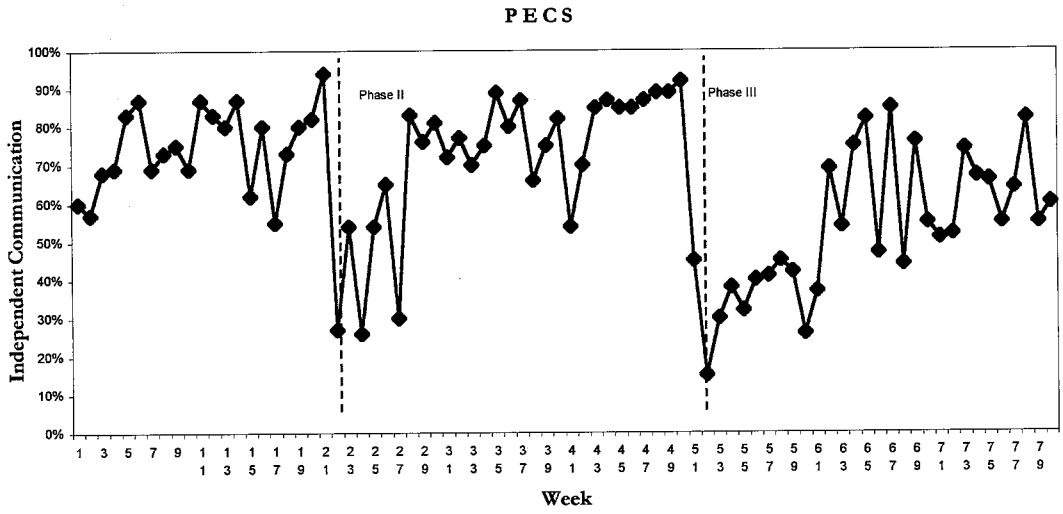
Participant 2 required many weeks to learn the skill of exchanging the card to obtain something desired. However once this skill was mastered he soon advanced through phase two and is progressing well in phase three

Figure 4.5 (P2, weekly average of aggressions)



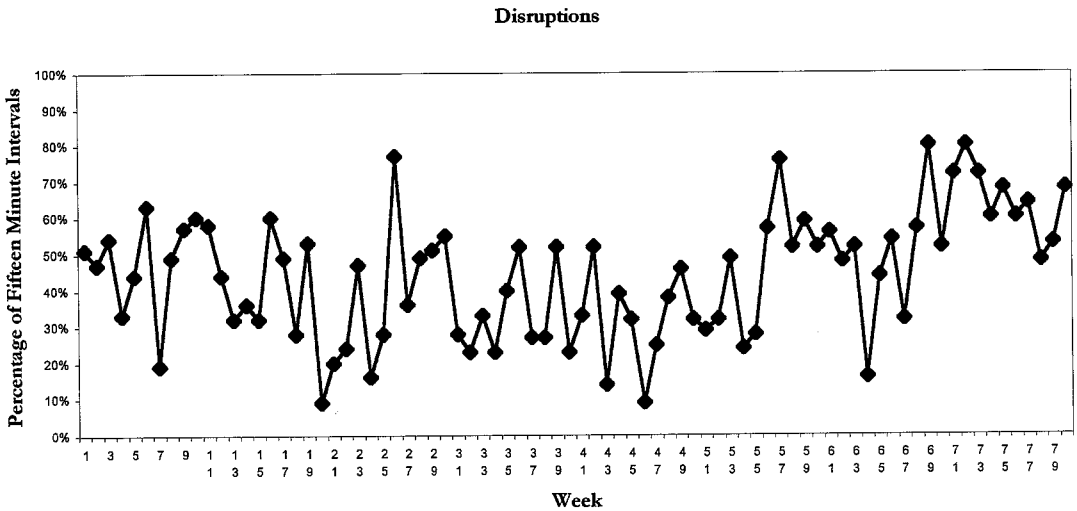
In terms of behaviors it is evident that as PECS training was introduced there was a slight decrease in aggressions. However as PECS communication increased and P2 advanced to higher phases there does not continue to show a decrease in aggressions.

Figure 4.6 (P3, weekly average of PECS accuracy)



As represented above P3 started out at high levels of accuracy and quickly mastered both phase one and two. However he appears to be having difficulties developing discrimination levels as evidenced by an unstable trend in level 3 accuracy.

Figure 4.7 (P3, weekly average of disruptions)



At no point in the 80 week period of PECS training did he show a decrease in disruptive. In fact it apparent that as he began each new phase his disruptive behaviors increased slightly.

Summary

After training in the Picture Exchange Communication Program System, all students showed improvement in their functional communication skills. Varying levels of cognitive functioning resulted in differing rates of advancement in the PECS system. Each participant acquired the ability to pick up the picture card in exchange for a desired item, at the completion of the study participants advanced to Phase III, although each is inconsistent with discrimination at this time their skills are developing.

Overall, PECS did not demonstrate to be effective in reducing behaviors, but all of the participants developed functional communication skills, which allows them to appropriately communicate their basic wants and need.

Chapter V
Discussion

Summary of results

The purpose of this study was to determine if the increase in communication skills in adults with autism would decrease challenging behaviors. To determine the effectiveness of communication training in reducing behaviors, both behavior data and PECS accuracy data were recorded daily and documented on a monthly tracking sheet.

The sample in this study consisted of 3 adult males diagnosed with autism and no verbal communication skills. The participants were between the ages of 24 and 27 and attended a data treatment center, which was used as the training environment in the current study. It was hypothesized that there is a high level of congruence between increased communication skills and reduction of challenging behaviors.

Research in the area of PECS for the development of communication and reducing challenging behaviors is very limited, however the research available does show evidence that functional communication is an effective behavior intervention. The literature reviewed in Chapter Two found that as long as the communication piece is functional and motivating it will be effective in increasing independent communication.

Three adults diagnosed with autism were observed while in a day treatment center (Monday-Friday 9am-2pm), PECS was used as the primary treatment for the participant's communication deficits. Treatment sessions were

conducted throughout the course of the day through both mass and situational trials. Mass trials were conducted in a session room and consisted of consecutive presentations of PECS trials. The situational trials were conducted at various times throughout the day when something was known to be desired of the participants. During their time in the center data was recorded both on the occurrence of challenging behaviors and on PECS accuracy. The data collected was averaged by week and document on a graph to measure progress and trend lines for each individual.

The results of this study found no consistent evidence that adults who utilize PECS will have a decrease in challenging behaviors exhibited. However there is evidence that functional communication can increase with training in PECS.

Conclusions

Overall, the current study did not agree with a large portion of literature on communication and challenging behaviors. When weekly averages of challenging behaviors were compared with increase in functional communication it was evident that behaviors were not decreasing as communication increased. Unlike previous research, challenging behaviors continued to be exhibited by each participant regardless of their level of communication. Further research on this topic should be conducted to determine if communication training would be an effective behavior intervention if used alone or in other training environments.

Discussion

There are several explanations for the lack of consistent evidence in this current study. The first is that during the 80 week period of data collection the participants were introduced to a variety of behavior and chemical interventions. Interventions are known to have both positive and negative affects on individuals with disabilities. During the behavioral and chemical intervention changes the participants may have had to many treatments occurring at one time and they could have counteracted the benefits of PECS as an effective intervention.

A second cause that may have affected the measures was that staff turn over is very high in the field of developmentally disabilities, therefore resulting in unfamiliar staff running the training sessions. It is common for individuals with disabilities to go through a testing trial with unfamiliar staff, during which time they will display higher rates of challenging behaviors, which would again counteract the positive effects of the PECS system. In addition newer staff have not been effectively trained in the PECS system and may have been taking inaccurate data or even incorrectly presenting the communication pieces.

A third reason for the lack of support may be attributed to not consistently running the communication program across environments. At the time of the current study the participants only participated in the training during their weekday vocational schedule, once they were home the communication device was not presented to them. It has been documented that in order for an individual with developmental disabilities to maintain and generalize learned skills it is best that skill training exist in all environments.

A fourth cause for the lack of evidence could be that preference assessments were completed monthly and with only a limited amount of materials. A preference assessment determines what is most reinforcing to the participants, and if they were not done often enough and a large selection I=of items were not available at all times the participants may have become less motivated to initiate communication.

The exact reason for the lack of sufficient evidence supporting PECS as a behavior intervention is unknown, however all of the above factors may have influences the participants at some point during the 80 week period in which this study was conducted.

Implications for further research

It is suggested that future studies on the use of PECS for individuals with no or limited communication focus on the using larger sample size of homogenous nature, in that they should be grouped together by cognitive abilities. In addition the use of a longitudinal study which last through all stages of PECS would be beneficial in evaluating if advanced functional communication would be more effective in decreasing behaviors.

A third area that needs to be looked at in future studies would be to promote generalization and maintenance, in the current study learned skilled were not generalized to new staff and were maintained in environments other than the training room.

A final area would be to use staff that have attended PECS seminar and

who a clear understanding of the purpose, positive effects, data collection and teaching strategies with the PECS system.

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